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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/661,195	09/12/2003	Steven G. Goebel	8540G-000150	7227
27572	7590	12/14/2004	EXAMINER	
HARNESS, DICKEY & PIERCE, P.L.C. P.O. BOX 828 BLOOMFIELD HILLS, MI 48303			AUSTIN, MELISSA J	
			ART UNIT	PAPER NUMBER
			1745	

DATE MAILED: 12/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/661,195	Applicant(s) GOEBEL, STEVEN G.	
	Examiner Melissa Austin	Art Unit 1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 November 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☒ Claim(s) 1 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|-----------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Group I in the reply filed on 24 November 2004 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)). Cancellation of non-elected claims 7-20 is acknowledged.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 18, 20, 22. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Information Disclosure Statement

3. The Information Disclosure Statement (IDS) filed on 12 September 2003 has been considered by the examiner.

Specification

4. The abstract of the disclosure is objected to because "MEA's" is an improper plural of MEA. The correct form of the plural is "MEAs." Correction is required. See MPEP § 608.01(b).

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5. The disclosure is objected to because of the following informalities:
- i. The plural of MEA should be "MEAs" not "MEA's." Correction of all occurrences is requested.
 - ii. Pg. 11, [0028]: "travels" should be "travel" for proper subject-verb agreement.
 - iii. Pg. 14, [0034], 2nd line: there should be no comma (,) after "also."

Appropriate correction is required.

Claim Objections

6. Claim 1 is objected to because of the following informalities: "MEA's" is an improper plural of MEA. The correct form of the plural is "MEAs.". Appropriate correction is required.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

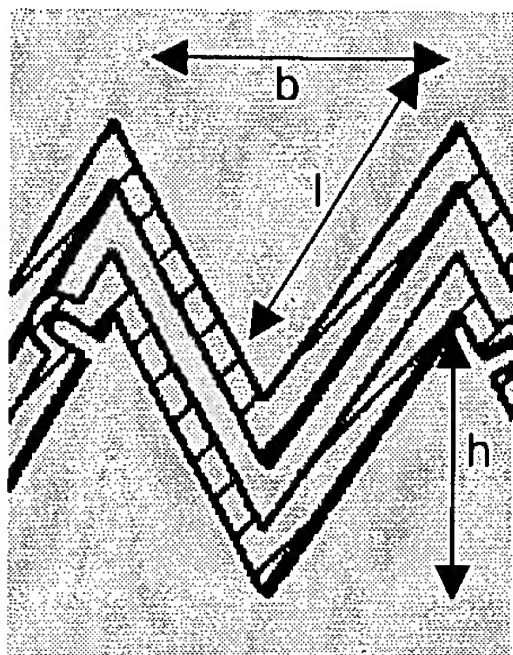
(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. Claims 1-5 are rejected under 35 U.S.C. 102(b) as being anticipated by Marianowski (6,261,710). Marianowski teaches a separator plate (applicant's bipolar plate) for a fuel cell. A fuel cell includes a membrane-electrode-assembly (MEA) composed of an anode, cathode, and electrolyte. The separator plate is disposed between the anode of one MEA and the cathode of an adjacent MEA. The separator plate is constructed of two sheet metal elements (applicant's first and second sub-plates) with identically shaped guide means that are nestled together to form a coolant flow space between the elements. As

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seen in Figure 3, the corrugations (60a, 60b) form a plurality of flow channels for distribution of the reactant gases, fuel and oxidant, to the anode and cathode electrodes, respectively. The corrugations are laterally centered at a distance from each other to form coolant flow channels. The surface area of the coolant flow channels is greater than the surface area of either reactant flow field (see sample calculation below), and the height of the coolant flow channels is substantially the same as the height of either reactant flow field. (Col. 2, ll. 12-62; Col. 3, ll. 52-63)



Considering as an example one pass of a straight channeled flow channel, as illustrated above, where d is the distance between the corrugations and w is the width of the flow channel:

Surface area of reactant flow field: $A_{s,r} = 2wl = 2w \sqrt{h^2 + (0.5b)^2}$

Surface area of coolant flow field: $A_{s,c} = 4wl = 4w \sqrt{h^2 + (0.5b)^2}$

$$A_{s,c} > A_{s,r}$$

9. Claims 1, 4, 5, and 6 are rejected under 35 U.S.C. 102(e) as being anticipated by Carlstrom (US 2003/022439). Carlstrom teaches a nested fuel cell flow field plate (applicant's bipolar plate). The flow field plate, placed between MEUs (applicant's MEA), is formed of first and second layers (applicant's first and second sub-plates). As shown in Figure 5, the nested layers form three flow fields (applicant's flow channels); 516 and 520 are anode (fuel) and cathode (oxidant) flow fields, respectively and 510 is a coolant flow field formed by the area between the layers (Figure 5: 502 and 504). The second layer has a plurality of flow fields (Figure 5: 520) that face the cathode of an MEU. The flow field channels may be straight or serpentine. The thickness of the layers is small (molded carbon composite layers thickness =

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0.04 inches), so the difference in height of the three flow fields is very slight, such that the height of the coolant flow field is equal to the height of the anode and cathode flow fields. (Pg. 2, [0016, 0017]; Pg. 3, [0041] - Pg. 4, [0045]).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melissa Austin whose telephone number is (571) 272-1247. The examiner can normally be reached on Monday - Thursday, alt. Friday, 7:15 AM - 4:15 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

mja

Melissa Austin
Patent Examiner
Art Unit 1745

A handwritten signature in black ink, appearing to read 'D. Austin', with a long horizontal flourish extending to the right.